# WESTCARB Annual Business Meeting

## Getting Down to Business—WESTCARB Executive Director's Overview

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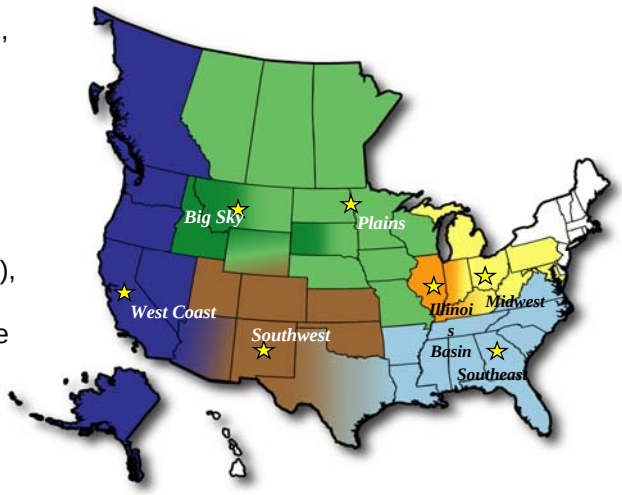
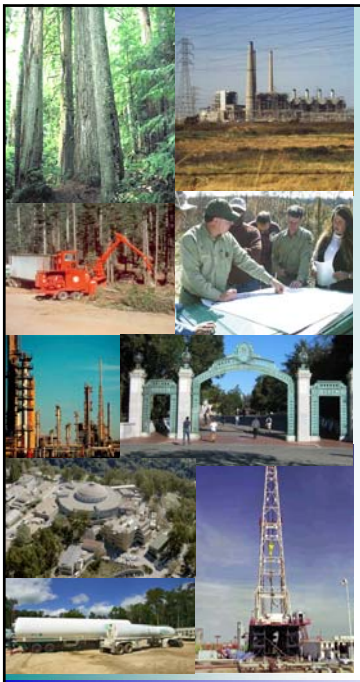
*Phoenix, AZ*
*November 8, 2006*

## WESTCARB Is One of Seven DOE Regional Carbon Sequestration Partnerships

- In Phase I (2004–05), partnerships evaluated geologic and terrestrial sequestration opportunities and costs
- In Phase II (2006–09), partnerships are conducting pilot-scale validation tests and refining regional characterizations
- Phase III (2008–2016), deployments





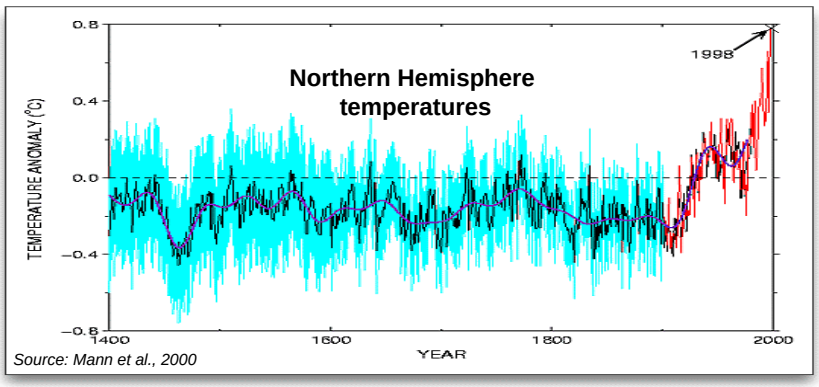
## WESTCARB Features Strong and Diverse Set of Partners; Robust Cost Share

- More than 70 organizations comprising:
  - Resource management and environmental protection agencies
  - National laboratories and research institutions
  - Energy and pipeline companies
  - Forest-product and ranching interests
  - Conservation nonprofits
  - Climate project standards organizations
  - Colleges and universities
  - Trade associations and policy coordinating bodies
- Represents world-class technical expertise
- Funded by U.S. Department of Energy, California Energy Commission, and partners



## Why We Are Here?

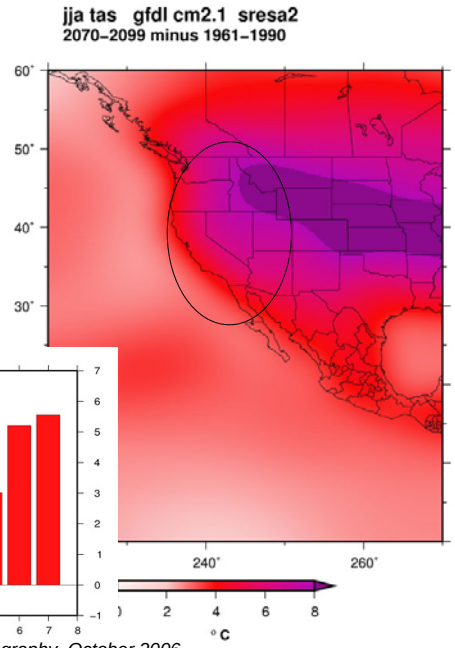
- The Earth is warming
- Growing scientific consensus on humans' fingerprint on $CO_2$ build-up and associated climate change

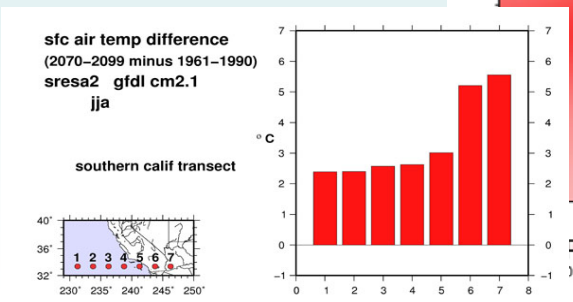



*Source: Mann et al., 2000*

## Regional Impacts Will Affect All WESTCARB States

- Climate models project 1.5–2°C ocean surface warming by 2100
- Greater warming on land than on ocean surface will amplify coast-interior thermal gradient
- Summer land warming is accentuated




*Source: Dan Cayan, Scripps Institution of Oceanography, October 2006.*



## There's No "Silver Bullet" for Global Climate Change

***A Portfolio of Solutions Is Needed to Slow, and Ultimately Reverse, the Buildup of $CO_2$ in the Atmosphere***

Energy Efficiency

Renewable Energy

Carbon Sequestration
- Terrestrial
- Geologic

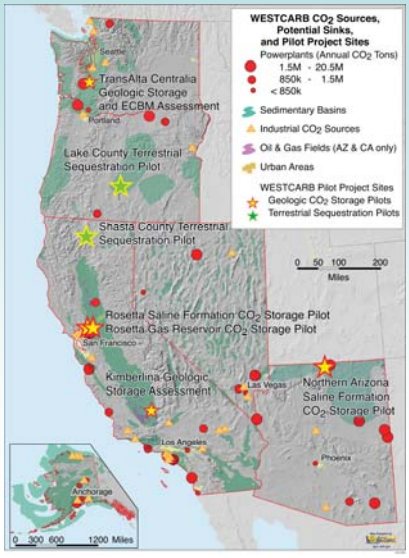
## Policy Response Is Occurring Throughout WESTCARB Region

- Examples of non/bi-partisan action by state and local policymakers throughout WESTCARB region
  - Gov. Napolitano Executive Order
  - Gov. Schwarzenegger Executive Orders
  - California Global Warming Solutions Act and related legislation
  - Oregon Solutions
- Interstate coordination—WGA Clean and Diversified Energy Initiatives, West Coast Governors Global Warming Initiative, CA–RGGI Cooperation, Southwest Climate Change Initiative, and more
- Substantial corporate policy development
- Growing recognition that climate solutions must be regional and involve many economic sectors

WEST COAST REGIONAL CARBON SEQUESTRATION PARTNERSHIP 7

## Phase II "Technology Validation" Pilots

- Pilot activities, representative of the best regional sequestration options, have commenced in four WESTCARB states
- Pilots involve site-specific focus for:
  - Testing technologies
  - Defining costs
  - Assessing environmental risks
  - Assuring safety
  - Gauging public acceptance
  - Testing regulatory requirements
  - Validating monitoring methods




WEST COAST REGIONAL CARBON SEQUESTRATION PARTNERSHIP 8

## What Will Our Pilot Tests Show?

- $CO_2$ can successfully be stored in suitable geologic formations and in stands of trees
- We understand the states of knowledge and uncertainty with respect to technical viability, cost, $CO_2$ measurement and monitoring capabilities, suitability of regulatory processes, and long-term environmental interactions
- Co-benefits can accrue to sequestration project developers, such as enhanced natural gas production and reduced risk of severe forest fires



## Public Outreach Is Critical to Success of WESTCARB Activities

- Increasingly important as pilots unfold and states take legislative/ executive initiatives
- Fundamental strategy has been "bottom up" for pilots (from landowners/community to county/ state officials and media) with overall partnership outreach to legislators/regulators, media, and affiliated professionals
- Website (www.westcarb.org) and handouts available; public meetings under way; Energy Commission Media Office and partners engaged
- Terrestrial and geologic sequestration each pose unique outreach challenges

WEST COAST REGIONAL CARBON SEQUESTRATION PARTNERSHIP
westcarb.org

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## California Policy and Research Initiatives

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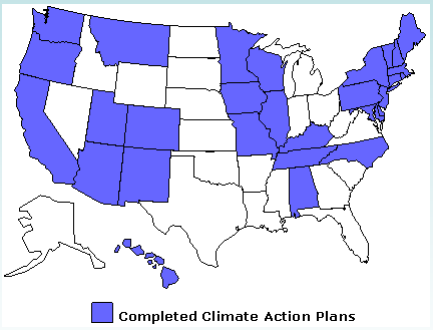
## Many States Are Adopting Climate Policies

- In the U.S., states are often at the forefront of emerging national policy issues
- State climate policies typically set GHG reduction targets, identify compliance paths, and may specify sectoral or economy-wide reductions by a given date
- Action is occurring in states without "completed plans"
- Apart from policy, research investments in climate change science and mitigation measures are growing steadily at the federal and state levels (and in the private sector)




*Source: Pew Center on Global Climate Change, Sept. 2006*

## Governor Schwarzenegger's Executive Orders

- S-3-05 (June 2005): Set California GHG targets
  - A return to 2000 levels by 2010
  - A return to 1990 levels by 2020
  - An 80% reduction below 1990 levels by 2050
  - Although not explicit in S-3-05, a "Climate Action Team" composed of key agencies was formed at this time to develop compliance strategies
- S-17-06 (October 2006): Directs state agencies to begin implementation of AB 32 (Global Warming Solutions Act)
  - Specifies coordination among key state agencies and organizations (including the California Energy Commission and California Climate Action Registry)



## Global Warming Solutions Act of 2006 (AB 32)

- Establishes first-in-the-world regulatory and market-based program to achieve real, quantifiable, cost-effective GHG reductions
- Creates a statewide GHG emission limit to reduce emissions to 1990 levels by 2020 (i.e., the target specified in Executive Order S-3-05)
- Designates Air Resources Board as state agency charged with monitoring and regulating sources of GHG emissions

*Source: "California Climate Policy Landscape," Shankar B. Prasad, Deputy Secretary for Science & Environmental Justice, California Environmental Protection Agency, September 2006.*

## AB 32 Timeline

- Adopt a list of feasible action measures by 7/1/07 and implement them before 1/1/10
- Establish by 1/1/08 a statewide GHG emissions cap for 2020 based on 1990 emissions
- Adopt mandatory reporting rules for sources of GHGs by 1/1/08
- Adopt by 1/1/09 an emission reduction plan using market and alternative compliance mechanisms, and adopt implementing regulations by 1/1/11
- Convene advisory committees on Economics, Technology, and Environmental Justice
- Ensure broad public participation in all actions

*Source: "California Climate Policy Landscape," Shankar B. Prasad, Deputy Secretary for Science & Environmental Justice, California Environmental Protection Agency, September 2006.*



## AB 32 Regulations and Compliance

- Maximum feasible and cost-effective reductions from sources and categories of sources
- Multi-sector, market-based declining annual aggregate emission limits [Note: California-consumed electricity generated out of state "counts" in state GHG total]
- Market-based compliance mechanisms
- Credits to entities for early compliance in reducing emissions
- Authorizes imposing fees to sustain the program
- Penalties for violators

*Source: "California Climate Policy Landscape," Shankar B. Prasad, Deputy Secretary for Science & Environmental Justice, California Environmental Protection Agency, September 2006.*

## AB 32 Special Considerations

- Ensure that GHG Regulatory Activities:
  - Do not interfere with efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxics
  - Consider cost and overall societal benefits
  - Minimize administrative burden in implementation and compliance
  - Minimize leakage (e.g., sources move out of state)
  - Prioritize sources based on GHG contributions
  - Do not disproportionately impact low-income communities

*Source: "California Climate Policy Landscape," Shankar B. Prasad, Deputy Secretary for Science & Environmental Justice, California Environmental Protection Agency, September 2006.*



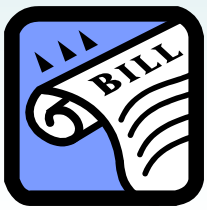
## Other Recent GHG-Related Legislation

- Senate Bill 1368: Specifies GHG performance standard for baseload power sources included in long-term procurement contracts let by California electricity providers
- Senate Bill 107: Accelerates Renewable Portfolio Standard (20%) attainment date from year-end 2017 to year-end 2010; modifies other RPS provisions
- Senate Bill 1 (Million Solar Roofs): Allows greater sales of excess power back to utilities, requires homebuilders to offer PV panel options by 2011, and reconciles differences between IOUs and municipals

## Assembly Bill 1925 Requires Recommendations to Accelerate Readiness of Geologic Sequestration

- Passed unanimously by legislature in August 2006; independent of mandatory greenhouse gas reduction bill (AB 32)
- Requires California Energy Commission, in consort with other agencies, to prepare "recommendations for how the state can develop parameters to accelerate the adoption of cost-effective geologic sequestration strategies for the long-term management of industrial carbon dioxide"
- AB 1925 is technically astute; Rep. Blakeslee holds a PhD in geophysics. Meetings with WESTCARB partners appear to have informed the bill.

**Sam Blakeslee**






## Public Interest Energy Research

- Ratepayer-funded program launched in 1996
- Addresses electricity, natural gas, and transportation
- $80 million annual budget
- A leader in no/low-carbon technology and global climate change research programs
- Annual California Climate Change conference attracts >400 attendees and researchers from around the world

## PIER Reauthorization Bill (SB 1250) Goals Are Solution-Focused

- General Goal
  - Develop and help bring to market, energy technologies that provide increased environmental benefits, greater system reliability, and lower system costs
- Specific Goals—Develop and help bring to market…
  - Advanced transportation technologies that reduce air pollution and greenhouse gas emissions beyond applicable standards, and that benefit electricity and natural gas ratepayers
  - Increased energy efficiency in buildings, appliances, lighting, and other applications beyond applicable standards, and that benefit electric utility customers



## PIER Reauthorization Bill (SB 1250) Goals Are Solution-Focused (cont'd)

- Specific Goals (cont'd)—Develop and help bring to market…
  - Advanced electricity generation technologies that exceed applicable standards to increase reductions in greenhouse gas emissions from electricity generation, and that benefit electric utility customers
  - Advanced electricity technologies that reduce or eliminate consumption of water or other finite resources, increase use of renewable energy resources, or improve transmission or distribution of electricity generated from renewable energy resources